

Chem-Form, Inc.

Pompano Beach, Florida

Region 4

FLD080174402

Site Exposure Potential

The 1.6-hectare Chem-Form site is located in a heavily industrialized area of Pompano Beach, Florida (Figure 1). Chem-Form, Inc. began operations in 1967 manufacturing precision metal parts for electro-chemical milling machinery and for the aerospace industry. Wastes generated at the site from manufacturing processes included spent oils, lubricants, organic solvents and acids. Oil and solvent wastes were stored in stainless steel tanks for off-site disposal. Process wastewater was discharged into a septic tank and associated drain field, or into an open trench in a field west of the main shop (NUS 1986; Westinghouse 1990).

The Chem-Form site is in an area that was once a low-lying wetland that is now filled with sand and crushed limestone to an elevation of 3 m above mean sea level. Groundwater occurs near the natural surface and exists in a highly permeable, sandy limestone aquifer that extends to a depth of 60 m. Natural groundwater flows from west to east. However, extensive groundwater withdrawal associated with development in the area has resulted in a reversal of the natural gradients. Though no surface waters traverse the site, Cypress Creek Canal flows within 0.8 km of the southern site boundary. Cypress Creek Canal flows into the Intracoastal Waterway approximately 7 km from the site.

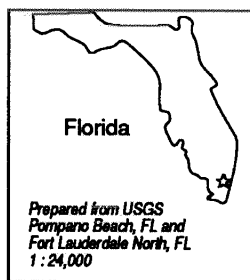
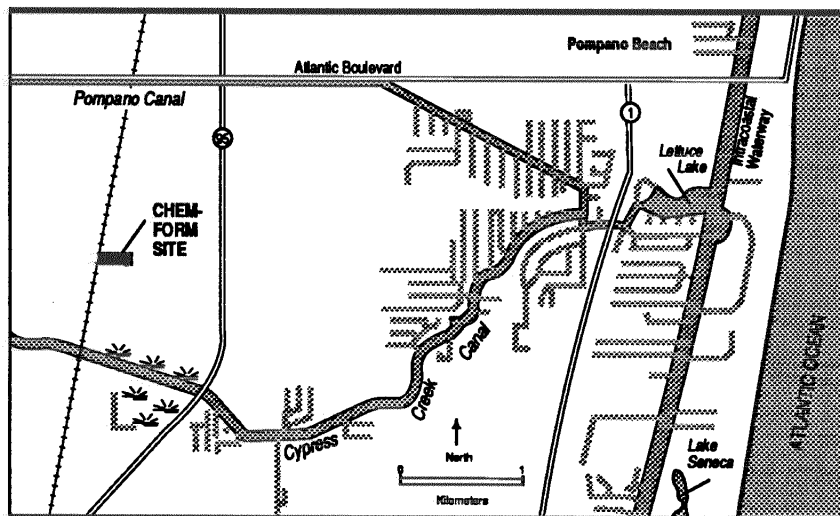


Figure 1.
The Chem-
Form site,
Pompano
Beach, Florida.



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Site Exposure Potential, *cont.*

Groundwater discharge to nearby canals and waterways is the primary pathway of contaminant migration to NOAA resources.

Site-Related Contamination

Results from preliminary surveys of contamination in soil and groundwater indicate the presence of trace elements in these media (NUS 1986). Low levels of organic compounds, including PCBs, were found in soils in one area of the site in the 1986 survey. Maximum concentrations of contaminants in the matrices sampled are presented in Table 1 along with applicable screening levels (NUS 1986; Westinghouse 1990).

Table 1.
Maximum concentrations of major contaminants detected in groundwater and soil collected at the Chem-Form site.

	Water		Soil	
	Ground-water µg/l	AWQC ¹ µg/l	Soil mg/kg	Average ² U.S. Soil mg/kg
INORGANIC SUBSTANCES				
antimony	ND	1600*	181	1
cadmium	40	1.1 ⁺	71	0.06
chromium	725	11	23400	100
cobalt	280	NA	36000	8
copper	269	12 ⁺	955	30
cyanide	15	5.2	1100	NA
lead	ND	3.2 ⁺	782	10
mercury	6.7	0.012	195	0.03
nickel	550	160 ⁺	49500	40
silver	7	0.12	12	0.05
ORGANIC COMPOUNDS				
PCBs	ND	0.014	4.6	NA
2,4-dinitro phenol	ND	NA	100	NA
2-methyl-4,6-dinitrophenol	ND	NA	100	NA
pentachlorophenol	ND	NA	100	NA
4-nitrophenol	ND	NA	100	NA
1: Ambient water quality criteria for the protection of aquatic organisms. Freshwater chronic criteria presented (EPA 1986).				
2: Lindsay (1979).				
ND: Not detected at method detection limit, detection limit not available				
* Insufficient data to develop criteria. Value presented is the Lowest Observed Effect Level (LOEL).				
+ Hardness-dependent criteria; 100 mg/l CaCO ₃ used.				
NA: Screening level not available				

Mercury was present at very high concentrations in groundwater samples from the Chem-Form site. Elevated concentrations of cadmium, chromium, copper, nickel, silver, and cyanide were also

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Site-Related Contamination, *cont.*

measured in groundwater samples collected at the site. No organic compounds were found in groundwater.

Trace elements were also detected at elevated levels in soils collected from the Chem-Form site. Chromium and nickel were present in most samples at very high concentrations. Antimony, cadmium, cobalt, copper, lead, mercury, and cyanide were also measured at elevated levels. Several phenolic compounds and PCBs were also detected in soils at elevated levels.

NOAA Trust Habitats and Species

The habitats of potential interest to NOAA are the Cypress Creek Canal and the Intracoastal Waterway. The canal is essentially fresh water at its closest point to the site (less than one kilometer). Canals in this region have been heavily impacted by water management practices, and no commercial or recreational fisheries are present in the canal (Conklin personal communication 1990). No anadromous fish are known to occur in the canal. Some freshwater species have been observed, including catfish, mosquito fish, and freshwater bass (Conklin personal communication 1990; Ferril personal communication 1990). At this time, there are insufficient data on contamination to indicate a direct pathway to the Intracoastal Waterway.

References

Conklin, E., Director Office of Programs and Planning, Florida Department of Natural Resources, Tallahassee, personal communication, July 10, 1990.

Ferril, D., Biologist, U.S. Fish and Wildlife Service, Vero Beach, Florida, personal communication, August 6, 1990.

Lindsay, W.L. 1979. Chemical Equilibria in Soils. New York: John Wiley & Sons. 449pp.

NUS Corporation. 1986. Site screening investigation report, Chem-Form, Inc./Wilson Concepts, Inc. site, Pompano Beach, Florida. Atlanta: U.S. Environmental Protection Agency, Region 4. Appendices.

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U.S. Environmental Protection Agency. 1986. Quality Criteria for Water. Washington, D.C.: Office of Water Regulations and Standards, Criteria and Standards Division. EPA 440/5-87-003.

Westinghouse. 1990. Remedial investigation and feasibility study workplan, Chem-Form site. Atlanta: U.S. Environmental Protection Agency, Region 4.